if not invariably, the growth of tumors is affected by dietary factors in much the same manner as is the growth of the host animals. In particular, tumor growth can often be prevented if constituents essential for body growth are largely omitted from the diet. Studies on the influence of diet on the formation of liver cancers induced by the feeding of butter yellow (p-dimethylaminoazobenzene) to rats have been very illuminating in showing that a large array of factors may be involved. Some factors, such as riboflavin and protein (casein, egg albumen) are anti-carcinogenic and tend to protect against cancer formation. Other factors, such as biotin and inositol, have been found to be procarcinogenic, tending to promote tumor formation. Still other materials, including cystine, choline, and crude vitamin concentrates, are amphicarcinogenic, that is, they may act anticarcinogenically under one set of dietary circumstances, and procarcinogenically under a different set of conditions. Evidently both vitaminic and avitaminic factors are involved in the controlling dietary balance, and the interpretation of the data may also be made in terms of sulfur, nitrogen, and methyl groups concerned. Very little work has been directed yet toward distinguishing between dietary effects upon initiation as contrasted to growth and development of tumors, and most of the work has dealt with animal tumors, induced or spontaneous, primary or secondary. Application to human cancer of information obtained with animal tumors is largely a problem for the future but certain aspects are definitely under attack at present.

The president announced that the Joseph Henry Lecture would be presented in the fall.

1203D MEETING

The 1203d meeting was held in the Cosmos Club auditorium, Saturday, May 9, 1942, President BROMBACHER presiding. An invited paper on *The absorption spectra of some organic dyes* was presented with illustrations by Mr. A. L. SKLAR, of the Catholic University of America. It was discussed by Messrs. FOURT, DURAND, and BROMBACHER.

The assignment of the light absorption associated with the color of organic molecules to a non-Rydberg electronic transition involving the unsaturation electrons was discussed from chemical and physical viewpoints. Evidence was summarized for the view that the 2,500 Å band of benzene is associated with transition between the two molecular energy states which may be considered as arising from a resonance splitting of the two Kekule structures. The same idea was carried over to the polymethine dyes, in which the two most stable resonance structures (I_a and I_b) are the analogues of the Kekule structures.

The only differences in the two cases are first, that the two structures, I_a and I_b, do not interact directly, but only through a series of "intermediate" structures of higher energy in which the positive charge is on one of the carbon atoms of the chain; and, second, that the two structures, I_a and I_b, may, in unsymmetrical dyes ($R_1 \neq R_2$), have slightly different energies. This view was then used to explain the following observations[1]: the increase of peak wavelength with chain length n; the existence of a "deviation" to shorter wavelengths in unsymmetrical dyes when compared to symmetrical dyes; the increase of the "deviation" with n; the apparent existence of a convergence limit; the Brooker sensitivity rule, and the Schwartzenback rule.

The president announced the election of the new Committee on Communications as follows: Messrs. K. F. HERZFELD (chairman), LAWRENCE WOOD, and PETER COLE. He announced that this would be the last meeting of the season.

FRED L. MOHLER, *Recording Secretary.*

[1] L. G. S. BROOKER and coworkers. Journ. Amer. Chem. Soc. **62**: 1116; **63**: 3129, 3203, 3214; **64**: 199.

Obituaries

CLINTON HART MERRIAM, who was an active spirit in the organization of the Washington Academy of Sciences when it was being founded toward the close of the last century, died quietly on March 19, 1942, after several years of failing health, at Berkeley, Calif., in his 87th year. On account of his life of high achievement along zoological and anthropological lines, not only has the Academy but all students interested in these and kin-

dred subjects lost a leader who set a pace well worthy to follow.

Dr. Merriam was born in New York City on December 5, 1855, son of Clinton L. Merriam and Caroline Hart Merriam. His interest in natural history began early in life, and it broadened in scope and matured in character as time went on. In 1872, and in his 17th year, he became naturalist of the Hayden Survey, which made explorations of the Yellowstone area. In 1874 he entered Sheffield Scientific School of Yale, and completed the course in 1877. While there he wrote his *Review of the Birds of Connecticut*, a very creditable piece of work.

He graduated from the College of Physicians and Surgeons, of New York, in the Class of 1879. On March 7, 1878, he assisted in founding the Linnaean Society of New York, and was elected its first president. During the years 1879 to 1885 Dr. Merriam built up a good medical practice at his home in Lewis County, N. Y.

During the spring of 1883, as surgeon of the sealing vessel *Proteus*, he visited the ice fields off the coast of Labrador and Greenland, to make a study of the hooded seals. He brought back valuable records and many specimens. In the autumn of the same year he joined with 22 others in founding the American Ornithologists' Union and was elected secretary, and during 1900–1902 he was its president. In 1885 he became chief of the Division of Ornithology, United States Department of Agriculture, which was the forerunner of the Biological Survey and, at present, the Fish and Wildlife Service. During the 25 years Dr. Merriam was chief, he planned and carried out a number of field expeditions to obtain data on life zones, distribution of animal and plant life, laws of temperature control, and geographic distribution of life. Among these may be mentioned the Biological Survey of San Francisco Mountain and Desert of the Little Colorado River, Arizona; Biological Reconnaissance of Idaho; Death Valley Expedition; and Biological Survey of Mount Shasta, California.

While Merriam was on the Death Valley Expedition in 1891 President Harrison appointed him a member of the U. S. Bering Sea Commission, to study fur-seal conditions on the Pribilof Islands.

The vast number of mammals collected by members of the Biological Survey enabled him to describe many new species, of which 651 type specimens are in the National Museum collections. He also monographed the pocket gophers, shrews, weasels, and the grizzly and big brown bears.

Dr. Merriam had considerable to do in planning the personnel and route of the Harriman Alaska Expedition, with Dr. Lewis R. Morris, physician of Mr. Harriman, and member of the Boone and Crockett Club. On the return of the expedition he devoted much time to editing its publications. In consideration for his untiring services, Mrs. E. H. Harriman established a special trust fund to enable him to carry on research work, which after retiring from the Biological Survey in 1910 he devoted largely to the linguistic studies of California Indians. During the years 1917 to 1925 Dr. Merriam was chairman of the United States Geographic Board.

Among the scientific societies and clubs in which he held membership the following may be mentioned: American Ornithologists' Union, Linnaean Society of New York, National Academy of Sciences, Washington Academy of Sciences, Boone and Crockett Club, Cosmos Club, American Society of Naturalists, Biological Society of Washington, American Philosophical Society, American Society of Mammalogists, Anthropological Society of Washington, and Zoological Society of London. In a number of these he was among the founders, and of a majority of them he was president at one time or another.

As author or editor he always endeavored to obtain exact facts, so that his 500 or more publications went through the most careful scrutiny before they were ready for publication. He helped many with editorial suggestions, and there are some reports that never would have seen the light of day had he not given much time to editing and revamping crudely prepared notes or manuscripts. Merriam was a man of many friends and admirers, and through his publications and advocacy he helped scores of ornithologists and mammalogists with their problems.

In science, as in other lines, there are contemporary waves where groups of individuals interested in similar problems associate together for a better understanding and ad-

vancement of their vocation or hobby. In the case of Dr. Merriam, he was one of the last to join his zoological contemporaries who passed beyond before him. The group of naturalists to which Dr. Merriam belonged was indeed a distinguished one, but none made a greater contribution than he to the natural history of America, and none will be remembered with more affection.—A. K. Fisher.

Andrew Stewart, born in Washington, D. C., on September 3, 1867, died on June 28, 1942, in his home at 1442 Clifton Street, Washington, D. C., after an illness of a year. Through his departure science lost a devotee; the Nation lost a citizen of intense loyalty; several cultural and patriotic organizations lost a leader and historian; and a household that typifies the finest of American home life lost a loving husband and father.

The Stewart family descended from Scotch and English lines that have been traced to the Royal House of England. In America they have long been prominent in the affairs of southwestern Pennsylvania and the Nation's Capital. Stewart's grandfather, the Honorable Andrew Stewart, for whom he was named, served Pennsylvania as a member of Congress for 18 years and gained the nickname of "Tariff Andy" through his continuous and successful advocacy of the protective tariff. He was also one of the initiators of the Chesapeake and Ohio Canal. David Shriver Stewart, father of the subject of this obituary, served in Washington as the chief of a division of the Patent Office.

The culture, sincerity, and patriotism derived from a background of ancestors who had served with distinction in the Revolution, the War of 1812, and the Civil War were reflected in Stewart's character. He graduated from Central High School where, because of high scholastic standing and proficiency in military drill, he was made first commanding officer of the cadets, holding the rank of major. After graduation he studied chemistry in Germany, and in 1895 he received the degree of doctor of philosophy, cum laude superato, at the University of Leipzig.

In 1895 Dr. Stewart returned to the United States and served for a short time in the "poison squad" of the Bureau of Chemistry, Department of Agriculture, under the late Dr. Harvey W. Wiley. Next, he conducted research on chemical synthesis for Sharp & Dohme. From 1897 to 1900, he and the late Dr. George W. Johnston established and conducted a chemical analytical laboratory, which was a pioneering project in that field in Washington. He lectured on this subject at the National Veterinary College and the Medical Schools of the George Washington and Georgetown Universities, and was associate editor of the National Medical Review. In 1902, he entered the Dendro-Chemical Laboratory of the Bureau of Chemistry, Department of Agriculture, and from 1903 to 1905 was in charge of that laboratory.

After a period spent largely in writing and the management of family estates, Dr. Stewart entered the Bureau of Mines in 1918, serving in the Division of Mineral Technology, which then conducted the Bureau's work on helium. As a result, he played a prominent part in pioneering work that led to important developments in later years. In 1925, when a Helium Division was organized in the bureau to handle the development and operation of helium plants to supply the Army and Navy, Dr. Stewart was made assistant to the chief of the division, and served in that capacity until he retired in 1933. He was a member and secretary of the Interdepartmental Patents Board.

Among his many publications was one entitled *About Helium*, which was written to present information to the layman concerning the history, properties, production, and uses of helium. This pamphlet is one of the most widely read of the Bureau of Mines' publications.

Dr. Stewart was a prominent member of the Sons of the American Revolution and the Society of Colonial Wars. From 1934 to 1938, he was vice-president general of the General Society of the War of 1812, and served the District society at various times as president, first vice president, registrar, and historian. In Masonic circles, he was past master of Harmony Lodge No. 17, a 32d degree Mason, and a member of the Shrine. He was a member of the Washington Academy of Sciences, the American Chemical Society, the American Association for the Advancement of Science, and the Cosmos Club.—R. A. Cattell.